

## TRIBAL CLASSIFICATION OF TRIOSTEUM (CAPRIFOLIACEAE)

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Traditionally the small genus *Triosteum* of disjunct Asian and eastern North American distribution has been included with *Viburnum* in the tribe Viburneae (Fritsch, Bot. Centralbl. 50: 137-139, 1891; Wagenitz, Engler's Syllabus der Pflanzenfamilien, 473-475, 1964). This classification has been questioned in recent years as research from several disciplines has extended our understanding of the Caprifoliaceae, research to which we are now able to add data from cytology.

Wilkinson (Amer. J. Bot. 36: 481-489, 1949) concluded that *Triosteum* differs too greatly from *Viburnum* by floral anatomy and morphology to be included in the same tribe. She found the former generalized and unspecialized compared with the unusual and complex structure of the flower of *Viburnum*. The irregular corolla and conspicuous sepal lobes of *Triosteum* reminded Wilkinson of some members of the Lonicereae and Linnaeae, although she believed that the genus might be segregated as a distinct tribe. Metcalf & Chalk (Anatomy of the Dicotyledons 2: 752-758, 1950) noted that cork usually arises in the pericycle region of the stem of *Triosteum*, which is also characteristic of the Linnaeae, Lonicereae and Diervilleae, whereas its origin is superficial in species of *Viburnum*. Adding further question to the alignment of *Triosteum*, Erdtman (Pollen Morphology and Plant Taxonomy, Angiosperms, 97-99, 1966) noted that its pollen was essentially similar to that of the Linnaeae-Lonicereae-Diervilleae group and he included *Triosteum* in the Lonicereae. Moreover, Bohm & Glennie (Canad. J. Bot. 49: 1799-1807, 1971) found the presence of only flavone glycosides in *Triosteum*, which supports its removal from the Viburneae and relocation closer to *Lonicera*. In fact, Hutchinson (The Genera of Flowering Plants 2: 81-89, 1967) suggested that *Triosteum* is probably little more than a reduced *Lonicera*, with



annual stems from a woody perennial rhizome, and the connate leaf-bases similar to those of the more advanced species of *Lonicera*. On this basis, however, Hutchinson separated the genus as the monotypic tribe Triosteae.

Members of the family differ in chromosome size, base number and ploidy. *Sambucus* and *Viburnum* have chromosomes much larger than all other genera varying in length from 4-5  $\mu$  (Sax & Kribs, *J. Arnold Arb.* 11: 147-153, 1930) with  $x = 8$  or more commonly 9 for *Viburnum* (Egolf, *J. Arnold Arb.* 43: 132-172, 1962) and  $x = 18$  and 19 for *Sambucus* (Ourecky, *Amer. J. Bot.* 57: 239-244, 1970). The remaining species studied have chromosome sizes averaging only 1-2  $\mu$ . Of these, members of the Linnaeae typically have  $x = 8$  primarily at the polyploid level, or less frequently  $x = 9$  (*Symphoricarpus*) and then commonly polyploid. The Diervilleae characteristically have  $x = 9$  and like *Symphoricarpus* are commonly polyploid. The Lonicereae also predominantly have  $x = 9$ , but largely at the diploid level.

To these results we add the chromosome number of *Triosteum*:  $2n = 18$  ( $x = 9$ ) based on *T. perfoliatum* L. from Missouri (Boone Co., Columbia, *Dunn s.n.* (MO); Dallas Co., Bennett Springs State Park, *Kastler s.n.* (MO); Franklin Co., Gray Summit Arboretum, *Fantz 1386* (MO); and Maries Co., ca. 2 miles NE of Vienna on Rt. 2, *Fantz 1128* (MO)). All counts are from root squashes, one plant from each population.

As the chromosomes of *Triosteum* approximate the size of those found for members of the Linnaeae-Lonicereae-Diervilleae group in agreement with data from gross morphology, anatomy, palynology and chemistry, the exclusion of the genus from the Viburneae is clear. Having a base number of 9 and ploidy level of  $2x$ , similar to members of the Lonicereae, we propose the inclusion of *Triosteum* in this tribe. We find no evidence for its separation as a unique tribe.

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